

TEMPERATURE SENSOR IC

FEATURES

- Linear Output Voltage 5 mV/°C Output
- 2.4 to 10.0 V Supply Range
- Miniature Package (SOT-25)
- Minimum External Parts Count
- Low Power Consumption

APPLICATIONS

- Home and Industrial Thermostats
- Automotive Climate Control
- Battery Charger Temperature Monitor
- Notebook Computer Temperature Monitor
- Electronic Thermometers
- Fish Finder Water Temperature
- Industrial Process Controllers
- Home Appliance Temperature Control


DESCRIPTION

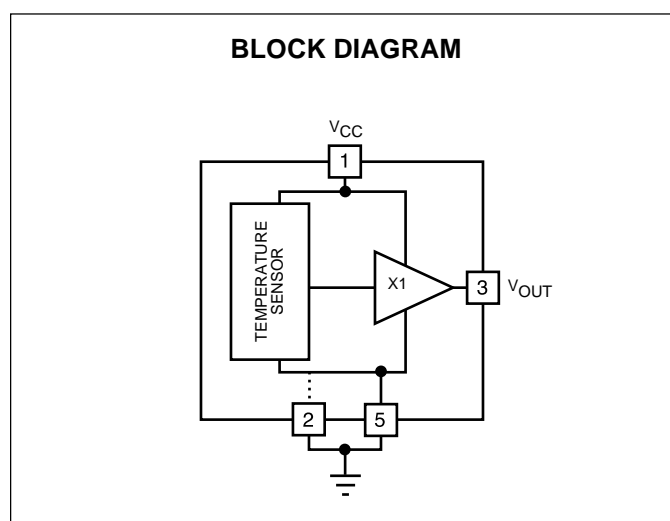
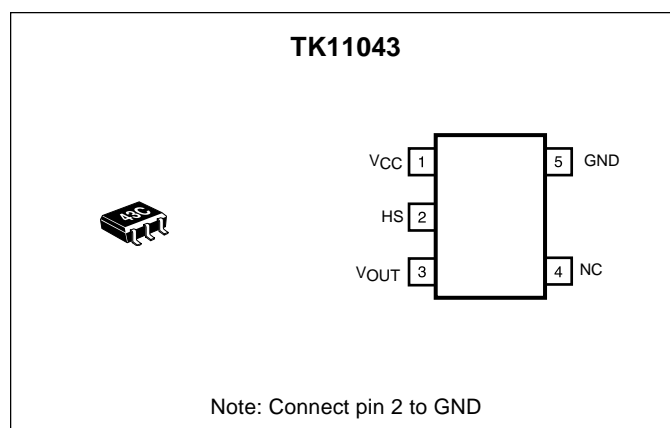
The TK11043 is a temperature sensor IC with a linear output of 5 mV/°C over the range of -30 to +105 °C. Its wide operating voltage range of 2.4 to 10.0 V makes it suitable for a number of applications requiring accurate temperature control, such as electronic thermostats for climate control, refrigerators, and industrial process controls.

A typical application is to make a digital representation of temperature with an A/D converter, or to make a thermal detector with a comparator.

The TK11043 has a compensation pin for a 0.1 μF capacitor that ensures stability over the IC's operating temperature range.

The TK11043 is available in a miniature SOT-25 surface mount package.

ORDERING INFORMATION	
TK11043M-1	 Tape/Reel Code
TAPE/REEL CODE TL: Tape Left	



ABSOLUTE MAXIMUM RATINGS

Supply Voltage	12 V	Storage Temperature Range	-55 to +150 °C
Operating Voltage	2.4 to 10 V	Operating Temperature Range	-30 to +105 °C
Power Dissipation (Note 1)	150 mW	Lead Soldering Temperature (10 s)	235 °C
Junction Temperature	150 °C		

TK11043 ELECTRICAL CHARACTERISTICS

Test Conditions: $V_{CC} = 3.0\text{ V}$, $I_{OUT} = 0\text{ }\mu\text{A}$, $T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
V_{OUT}	Output Voltage	$T_A = 25\text{ }^{\circ}\text{C}$	1.487	1.502	1.517	V
		$T_A = 85\text{ }^{\circ}\text{C}$	1.784	1.804	1.824	V
		$T_A = -30\text{ }^{\circ}\text{C}$		1.225		V
T_C	Temperature Coefficient	$T_A = 25\text{ }^{\circ}\text{C}$ to $85\text{ }^{\circ}\text{C}$	4.50	5.04	5.50	mV/°C
Line Reg	Line Regulation	$V_{CC} = 3$ to 10 V	-12	2	12	mV
Load Reg	Load Regulation	$I_{OUT} = 0$ to $100\text{ }\mu\text{A}$	0	2	12	mV
I_{CC}	Supply Current	$T_A = 25\text{ }^{\circ}\text{C}$		110	180	μA
I_{OUT}	Output Current	$\Delta V_{OUT} \leq 15\text{ mV}$			400	μA

Note 1: Power dissipation is 150 mW when mounted as recommended. Derate at 1.2 mW/°C for operation above 25 °C.

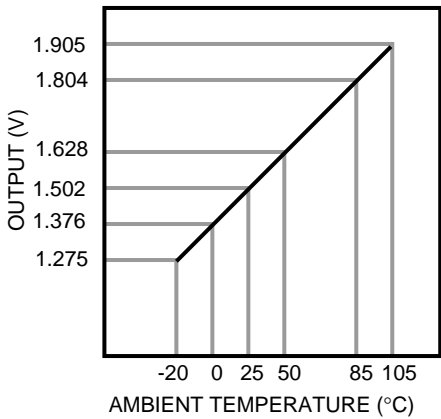
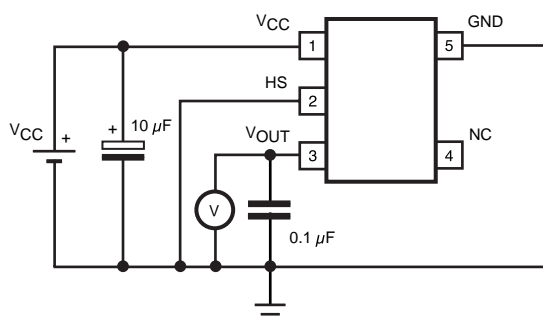


FIGURE 1. OUTPUT CHARACTERISTICS

TEST CIRCUIT

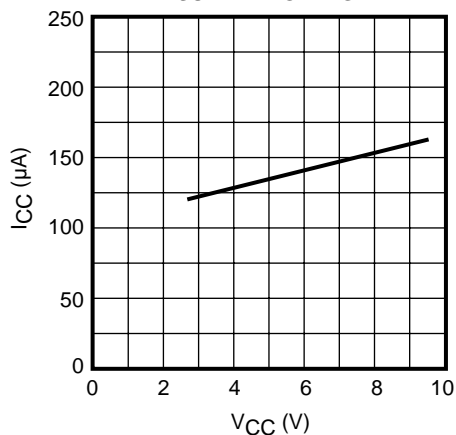


Note: Connect pin 2 to ground

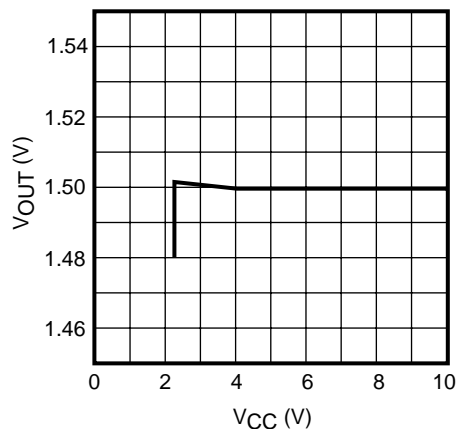
TYPICAL PERFORMANCE CHARACTERISTICS

$V_{CC} = 3\text{ V}$, $T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise specified.

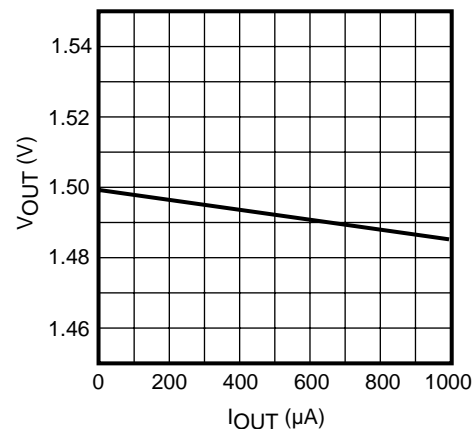
SUPPLY CURRENT vs.
SUPPLY VOLTAGE



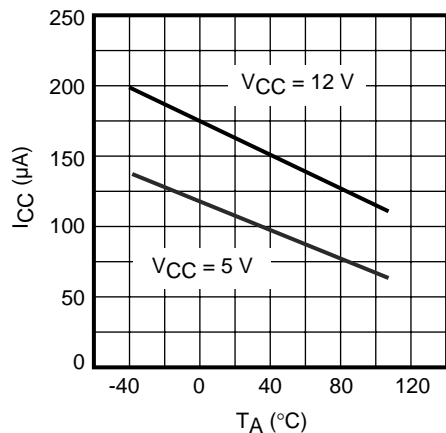
OUTPUT VOLTAGE vs.
SUPPLY VOLTAGE



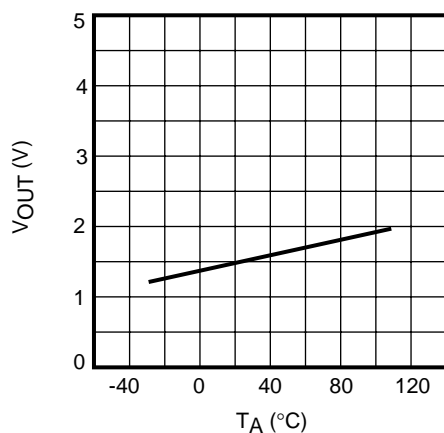
OUTPUT VOLTAGE vs.
OUTPUT CURRENT



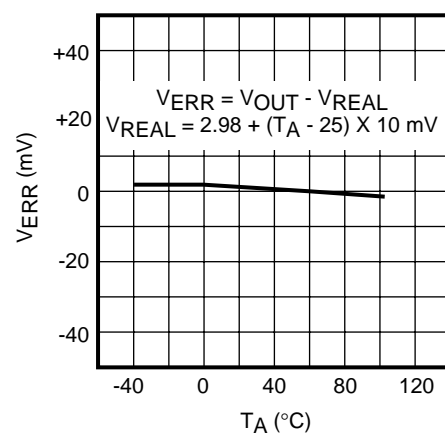
SUPPLY CURRENT vs.
TEMPERATURE



OUTPUT VOLTAGE vs.
TEMPERATURE

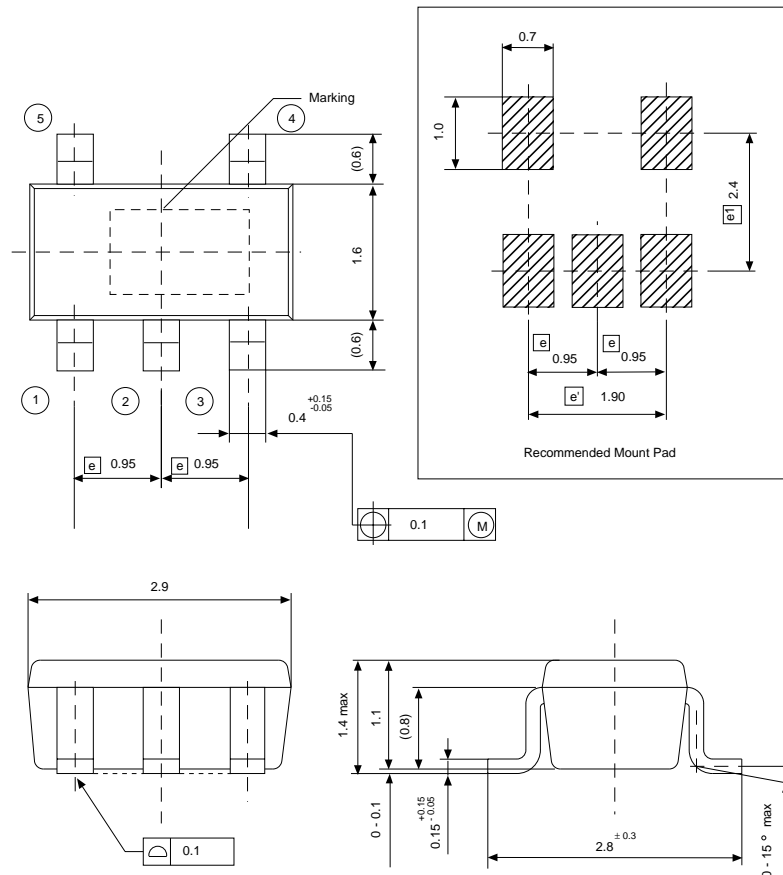


LINEARITY ERROR vs.
TEMPERATURE



PACKAGE OUTLINE

SOT-25 (SOT-23-5)



Dimensions are shown in millimeters
Tolerance: x.x = ± 0.2 mm (unless otherwise specified)

Marking Information

TK11043

Marking
43C

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